

AD-A076 263

HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

F/6 5/9

FUNCTIONAL LITERACY TRAINING PROGRAM FOR THE NATIONAL GUARD. (U)

SEP 76 L C FOX , W J MCGUIRE , J N JOYNER

DAKF03-76-C-0130

UNCLASSIFIED

HUMRRO-FR-WD-CA-76-15

NL

| DF |
AD
A076263
REF ID: A676263

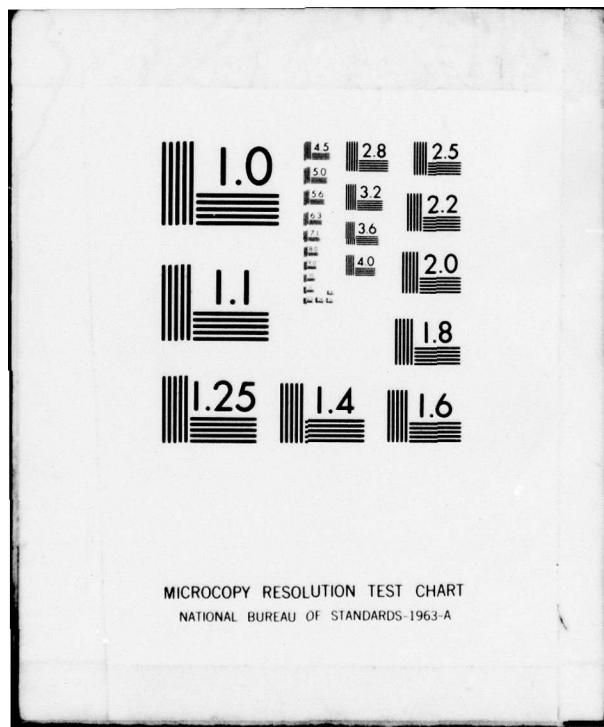


END

DATE
FILED

11-79

DDC



nal Report
76-15

HumRRO
FR-WD-CA-76-15

E-8868
P
HumRRO

16VET

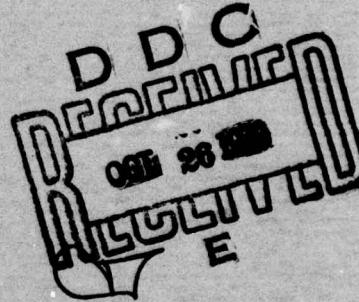
AD A 076263

DDC FILE COPY

Functional Literacy Training Program For the National Guard

Lynn C. Fox
Wendy J. McGuire
John N. Joyner
Human Resources Research Organization

MAJ Steven L. Funk
Headquarters Command, Fort Ord, California



HUMAN RESOURCES RESEARCH ORGANIZATION
300 North Washington Street • Alexandria, Virginia 22314

September 1976

Prepared for
Commander
7th Infantry Division and Fort Ord
Fort Ord, California 93941

Approved for public release;
distribution unlimited

79 10 26 082

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER FR-WD-CA-76-15	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Functional Literacy Training Program for the National Guard	5. TYPE OF REPORT & PERIOD COVERED Final Report	
7. AUTHOR(s) Lynn C. Fox, John N. Joyner Wendy J. McGuire, Steven L. Funk	6. PERFORMING ORG. REPORT NUMBER DAKF03-76-C-0130	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Human Resources Research Organization 300 North Washington Street Alexandria, Virginia 22314	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 12 41	
11. CONTROLLING OFFICE NAME AND ADDRESS Procurement Division, DIO Post Office Box 325 Fort Ord, California 93941	12. REPORT DATE September 1976	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Educational Division Fort Ord, California 93941	13. NUMBER OF PAGES 39	
15. SECURITY CLASS. (of this report) UNCLASSIFIED	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited	17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)	
18. SUPPLEMENTARY NOTES Research performed by HumRRO Western Division, Presidio of Monterey, California, under Project FLING.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) adult literacy job reading task tests reading evaluation curriculum job skills training reading training delivery systems national guard training functional literacy reading		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report describes the development, operation, and evaluation of a five-and-one-half-day, modified version of the Army's Advanced Individual Training Preparatory Training (AITPT) program for active duty National Guard personnel undergoing Advanced Individual Training at Fort Ord, California. The study describes the development and operation of the FLING school, including the modifications made to the AITPT program in order to accommodate it within the allotted time requirements. Program effectiveness is described both in terms of in-course performance data and pre-/post-training measures of student (cont.)		

Block #20 Continued

performance. Major findings indicate that: (1) A substantial portion of the National Guard personnel tested (61%) have general reading skills below the 7.0 reading grade level. (2) Given 21 to 26 hours of training time, modified versions of the AITPT program can effectively increase students' ability to perform job-related reading tasks (2.0 years average gain for students with entry Job Reading Task Test scores below the 7.0 grade level). (3) Internal module proficiency data indicate that most personnel, regardless of reading grade level, do need some instruction to improve their ability to perform specific job reading tasks.

Accession For
NTIS GRANT
FDC TAB
Unenclosed
Justification
By
Distribution/
Availability Codes
Avail and/or
Dist. special

UNCLASSIFIED

SUMMARY

Purpose

This FLING project was conducted for the purpose of developing, operating, and evaluating a short-term, modified version of the Army's Advanced Individual Training Preparatory Training (AITPT) program. The students were active duty National Guard personnel designated for entry job skills training at Fort Ord, California.

Approach

The Army's six-week, job-related AITPT reading program was adapted for use in a five-and-one-half-day period of instruction by making modifications to the program's two major instructional components:

- Strand I — Job Reading Task Training
- Strand II — Basic Reading Skills Training

Strand I training included:

1. Forced-pacing of students to complete a module of training per day.
2. Relaxing the module mastery criterion and reducing the quantity of remedial worksheet assignments.
3. Changing the module training sequence.

The Strand I training accounted for 75% of the FLING instruction.

Strand II training was restricted to instruction on the conceptualizing skills involved in producing images and classification table type displays through the transformation of prose information. The basic modification was the reduction of the amount of exposure normally available to students for this type of instruction. Twenty-five percent of the FLING training time was allocated for Strand II training.

In addition to the Strand I & II modifications, there was a philosophical difference between the two programs. The AITPT program was developed to provide remedial literacy training for specially selected personnel. The FLING training was given as the introductory phase to the job skills training program and as such, was required training for all personnel; i.e., no implication that this was remedial reading training. Otherwise, the FLING program utilized the same general structure, instructional techniques, quality control procedures, and instructional materials as found in the AITPT program.

Evaluation information was collected on in-course student performance in terms of pre/post training measures on the Strand I module proficiency tests and on the Strand II Classification Table tests. Overall, program effectiveness was assessed by pre/post training measures of student performance on the Job Reading Task Test (JRTT).

Results

A substantial number of National Guard personnel (61%) were estimated to have general reading skills below the 7.0 grade level.

For purposes of analysis, the students were divided into two groups on the basis of their performance on their entry JRTT scores; i.e., those students reading below the 7.0 grade level, and those reading at/above the 7.0 grade level.

The Strand I module proficiency data indicated that three-quarters of the below 7.0 students, and slightly less than half of the at/above 7.0 group, needed instruction to improve their skills in performing job reading tasks. After training, approximately 40% of the below 7.0 students, and approximately 75% of the at/above students met the module mastery criterion. Time pressures required forced movement of the other personnel to the next training module regardless of skill mastery level. In comparison to the original, longer term AITPT program, less people were able to meet module criterion in the FLING program, even with the slightly lower mastery criterion. Thus, more training time than the 20 to 21 hours of FLING training is necessary if students are expected to achieve module mastery.

The Strand II conceptualizing (comprehension) data showed a 22% (mean) increase in the number of correctly answered items on the post-training Classification Test for the below 7.0 group. The at/above entry scores were so high that they permitted little opportunity for substantial improvement. All in all, there was an improvement in the students' comprehension skills as reflected in the increase in their ability to transform prose type information into a classification table type display without distorting the meaning of the prose materials.

Overall, program effectiveness, as measured by the students' performance on the JRTT, showed a 2.0 years gain for the below 7.0 group and 0.7 year gain for the at/above 7.0 group. The small gain for the better readers was not unexpected, since the training was basically designed for personnel reading at or below the 6.1 reading grade level. Comparison of the below 7.0 group with the AITPT program and two other versions of that program, indicated that the FLING training was equally effective in terms of JRTT gain.

JRTT data collected on the performance of these same students after completion of their job skills training shows an additional slight increase (0.6 year gain) in their ability to perform job-related reading tasks. This indicates that the job skills training tended to reinforce the job reading task skills taught in the FLING program.

Conclusions

1. A short-term modified version of the AITPT program's Strand I training can be effectively conducted within 21 to 26 hours of training time.
2. Research needs to be done to determine the minimum amount of time required to effect a 2.0 years gain in job reading task performance, and to determine the amount of time and the type of instruction necessary to effect a gain greater than 2.0 years.
3. The success of the program may also be particularly attributed to:
 - a. Careful selection and control of teaching staff.
 - b. The short duration of the program (five cycles) which was not sufficient time for the instruction to become institutionalized.
 - c. The understanding that the FLING training was the introductory phase of job skills training, not remedial literacy training, and that it was required for all personnel.
4. Short-term programs like the FLING and the AITPT programs are not sufficient, in and of themselves, to make major changes in the cognitive processing skills of the really marginally literate personnel. If the Army, or any other organization, is intending to substantially improve personnel literacy skill levels, a program of continued upgrade training is necessary.

PREFACE

This report summarizes work performed by Project FLING of the Human Resources Research Organization (HumRRO) for the U.S. Army under contract with the Department of the Army, Procurement Division, Fort Ord, California. The report includes information on the development, operation, and evaluation of a five-and-one-half-day, modified version of the Army's Advanced Individual Training Preparatory Training program for National Guard Personnel.

The work was conducted by the HumRRO Western Division, Presidio of Monterey, California, where Dr. Howard H. McFann is Director.

Mr. Joseph E. Cain was the Contract Officer's Technical Representative for this project.

Military support was provided by the U.S. Army Directorate of Reserve Components, Fort Ord, California, COL George M. Scheets, Director.

The project was conducted by Mr. Lynn C. Fox as Project Director, Miss Wendy J. McGuire, Mr. John N. Joyner, and MAJ Steven L. Funk.

The instructors were: Mr. Robert Burns, Mr. Joseph Grey, Mrs. Carolyn Hartney, Mr. Robert McDonald, Mrs. Sandy Mercer, Mr. Robert Updike, Mrs. Janice Young, and Mr. Michael Zapf.

HumRRO research for the Department of the Army was conducted under contract number DAKF03-76-C-0130.

TABLE OF CONTENTS

	Page
Introduction	7
Development of the Guard's Literacy Program	9
AITPT Literacy Training Program	9
Strand I Training	10
Strand II Training	10
AITPT Effectiveness	11
Development of the FLING Program	11
Modifications Necessitated by Range of Reading Levels	11
Modification Necessitated by the Compressed Training Time	12
Teacher Training	15
Administrative Operation of the FLING School	15
FLING Effectiveness	18
Student Characteristics	18
In-Course Performance Data	22
Strand I Module Evaluation Data	22
Strand II Comprehension Data	25
Pre-Post Measures	29
FLING Student Performance on JRTT	29
Comparison of FLING JRTT Data With That of Other Versions of the AITPT Program	33
Effect of MOS Training on Student JRTT Performance	35
Program Conclusions & Implications	37

ILLUSTRATIONS

Figure

1	AITPT Strand I Module Training Sequence	14
2	Distributions of Pre-/Post-Training Measures on the Strand II Classification Test for Students in the Below 7.0 Reading Level Group	28

LIST OF TABLES

Table		Page
1	FLING Training Schedule	17
2	FLING Student Characteristics	19
3	FLING Students Distributed over USAFI Reading Grade Levels by MOS	20
4	FLING Students Distributed over Entry JRTT Reading Grade Levels by MOS	21
5	Module Proficiency Data for FLING Students	23
6	Module Effectiveness Data for Four Versions of the AITPT Program	24
7	Pre-/Post-Training Measures of Performance on the Strand II Classification Table Test for Students in the Below 7.0 & At/Above 7.0 Groups by MOS	27
8	FLING Student Entry & Exit Mean JRTT Scores by MOS	30
9	Mean JRTT Gain Scores for FLING Students Distributed Over Entry JRTT Levels by MOS	31
10	Distribution of Student Reading Grade Level Gain	32
11	Comparison of Pre/Post JRTT Scores for Three Modified Versions of the AITPT Strand I Training Program with the FLIT/AITPT Program	34
12	Comparisons of Mean JRTT Scores for FLING Students at Three Points in the Training Cycle	36

FUNCTIONAL LITERACY TRAINING PROGRAM FOR THE NATIONAL GUARD

INTRODUCTION

The continuing need of organizations to maintain a work force of qualified capable personnel creates a heavy demand on the organization's training system. This is particularly true of organizations like the U.S. Army and her sister services who are faced with the problem of training large numbers of people with varying skill and aptitude levels. The magnitude of these training problems is substantially increased when manpower shortages require the induction of large numbers of marginally skilled/literate personnel. One approach, generally undertaken by the Army and other services to help cope with these training problems, is to provide short term, remedial reading training for low literate (below the 5.0 reading grade level) personnel prior to formal basic combat training (BCT).

Due to the large numbers of marginally literate personnel inducted in the late 60s under Department of Defense Project 100,000, the Human Resources Research Organization, under contract to the Department of Defense and the Department of the Army, conducted a series of research studies to better understand the role of reading in the Army; particularly in reference to the relationship between job reading demands, job performance, and the reading skills of Army job performers. As a result of this research, it was found that:

1. A wide gap existed between the reading difficulty level of the job materials a person must use on the job, and the reading ability of the actual job performers. The average difficulty level, for most job printed materials, was at the 12th-plus grade level, while the average reading level of the job performers ranged from 7.5 to 9.5 grade levels.
2. There was a positive relationship between a person's reading ability and his successful performance on a job, as measured by both "hands-on" performance and written job knowledge tests.
3. There were minimal reading requirements which a job performer must have in order to be a competent job performer: 7th grade for Cooks, 8th grade for Mechanics, and 9th grade for Clerks. This illustrated that the 5.0 reading grade level goal of the Army Preparatory Training (the Army's then-current literacy training program) was far short of the above minimal job reading requirements.

4. There were specific job reading tasks which a person must be able to do in order to perform these jobs successfully. One must be able to use a table of contents and an index, read a table or graph, extract information from the main body of the manual, follow written procedural directions, and fill out forms (Sticht, Caylor, Fox, Hauke, James, Snyder, & Kern, 1973).

Thus, the research at this point indicated that indeed, there was a need for remedial literacy training to help prepare marginally literate personnel so that they could have a chance to successfully complete their job skills training — Advanced Individual Training (AIT) — and to be able to satisfactorily perform their Military Occupational Specialty (MOS), i.e., their job.

In recognition of these findings, the Army requested HumRRO to develop a job-related literacy training program for its marginally literate personnel. This research, development, and evaluation effort, initiated in 1971, was carried out under a HumRRO project titled Functional Literacy (FLIT). In 1974, the fully developed and evaluated FLIT program was formally adopted by the Army as its official literacy training program, and as such, was fully implemented Army-wide. The new program was named the Advanced Individual Training Preparatory Training (AITPT) program (TRADOC Circular 621-1).

Until recently, the National Guard has not been faced with the Active Army's problems of either inducting or training large numbers of marginally literate personnel. Evidently, the termination of the draft has resulted in a change in the aptitude level mix in the National Guard's manpower, with an increase of marginally literate personnel. This situation was brought into focus during the Guard's annual active duty training of newly inducted personnel at Fort Ord, California this year. The purpose of this annual training is to provide the Guard unit with a soldier fully trained in basic combat skills and subjects and in the entry level skills for a specified MOS. During the basic combat portion of the active duty training, the training company cadre and instructors reported that a large percentage of the trainees were having difficulty reading the Army's "Smart Book", the trainee's guide for basic military training. As a result, two of the companies ($N = 387$) were administered the reading section of the United States Armed Forces Institute (USAFI) Achievement Tests II, Form AA. The results of this test indicated that 66% of those trainees had reading skills below the 7.0 reading grade level — the minimum functional reading requirement for the Army's least demanding MOS (Sticht et al, 1973) — and 12% of them tested below the fourth grade level. Thus, there was concern that a large percentage of these personnel would not be able to complete their job train — with its higher literacy requirements and heavier instructional demands, inasmuch as two-thirds of the personnel were designated for training in MOSs whose minimum reading requirements were well above their demonstrated reading skills levels.

To ameliorate the training problems associated with providing MOS training to personnel with such low literacy skills, the Army decided to provide a shortened version of the AITPT program for all Guard trainees scheduled for MOS training at Fort Ord, California. This decision was based, in part, on previous HumRRO research which had explored the feasibility and effectiveness of presenting FLIT/AITPT Strand I training in a modified version for delivery as an extended training day program or as an integrated job skills/reading skills training program. Both of these programs proved to be effective when delivered in either of these forms (Sticht, 1975).

Due to the shortness of the preparation time and the need to modify the original AITPT program so that it could be conducted in the five-and-one-half-day period between the completion of BCT and the start of MOS training, HumRRO was contracted by the Fort Ord Procurement Office for the purposes of developing, operating, and evaluating a modified AITPT program for National Guard personnel in the following MOSS: Cook (94B), Field Wireman (36K), Driver (64C), Mechanic (63B), and Supplyman (76Y). Work on this program was accomplished under HumRRO project FLING — Functional Literacy Training for the National Guard.

DEVELOPMENT OF THE GUARD'S LITERACY PROGRAM

To facilitate this discussion, a brief description of the FLIT/AITPT program will be given initially, followed by the discussion of the modifications of that program which were made to accommodate its use in the 5-1/2-day training period.

AITPT Literacy Training Program

The AITPT program is a job-related, functional literacy program designed to enhance a person's reading skills so as to be able to satisfactorily perform the reading tasks demanded by the person's MOS. The program's objective is to provide intensive training on job reading tasks to enable personnel to perform these tasks with the skill of a person with a 7.0 general reading ability. Student selection is based on the demonstration of a reading ability at, or below, the 6.1 level after a dual screening process. The curriculum, prepared to train personnel with MOSSs in one of six job clusters (Cook, Clerk-Supply, Combat, Communications, Mechanic-Driver, and Medic) is composed of two basic instructional components or strands:

- Strand I (Job Reading Task Training) — is intended to provide extensive drill and practice in performing job-related reading tasks involving the use of regular job manuals.

- Strand II (Basic Reading Skills Training) — is intended to improve basic reading skills and job knowledge through instruction using simplified job reading materials.

Strand I Training

The job reading task training is characterized as being individualized, self-paced, performance-oriented instruction. That is, the training permits the student to perform the kinds of reading tasks he will encounter in job training and out on the job; thus, providing direct transfer of skills learned in the literary training to the job training and to the job. In addition, the instruction is given in a functional context by using actual job reading materials to train personnel in performing actual job reading tasks. This helps motivate the poorer reader by showing him a job-related need for the training, thus removing it somewhat from the negative shadow of his previously unsuccessful remedial general reading experiences.

The program is composed of six separate modules of linearly sequenced job reading skills (Table of Contents, Index, Tables and Graphs, Body of Manual, Procedural Directions, and Forms). Each module contains a set of pre-module and post-module proficiency tests, printed worksheets, and branching loops for remedial instruction. The proficiency tests are used to assure that the student has developed a certain mastery of the reading task before proceeding to the next module. Each proficiency test (or pre-test, as they are generally referred to) is made up of four sections, each with its own set of five questions. There is no time limit to the test; however, to satisfactorily master the task, the dual criteria of 90% or more correct, in 20 minutes or less, must be met.

Students are used in the more routine records management activities in the classroom. Periodically, a student may tutor another student on a skill which he, himself, has previously learned. These activities cut down the teacher's administrative paper-correcting load, and help the student "stamp-in" the skills he has just learned.

Strand II Training

This training focuses on skills grouped into three components: (1) word recognition, (2) languaging, and (3) conceptualizing. Because it was recognized that it was nearly impossible to make any lasting significant changes in the cognitive processing skills of the really marginally literate personnel in this short time period, it was decided to include only the conceptualizing component of the Strand II program in the FLING instruction, since it appeared to be more relevant for at least the majority of the people.

This component deals with the development of increased reading comprehension skills and direct instruction to increase job knowledge. Job concepts are presented to the students along with various conceptualizing strategies or schemes useful in the process of "comprehending" the concepts, and thus increase the individual's knowledge base in the job area.

Of the three types of conceptualizing skills included in the AITPT Strand II program (flow charts, image displays, and classification tables) only the last two techniques were selected for teaching in the FLING program. Flow chart instruction was excluded because it requires more time than that allocated for this program.

AITPT Effectiveness

Program effectiveness is evaluated on pre-/post-training measures of the student's performance on the USAFI Intermediate Achievement Test and on the Army's Job Reading Task Test (JRTT). In addition, internal, formative data is collected on the student's performance on the Strand I module proficiency tests, and the Strand II pre-/pcst-training classification tests. Results of the AITPT program will be discussed later in comparison to the FLING students' performance data.

Development of the FLING Program

After consideration of the various components of the AITPT program, and the goals and time constraints imposed by the Guard's training commitments, and prior research experience in modifying the FLIT program for short term training experiences, it was decided to focus 75% of the student's daily training time on Strand I job reading task instruction, and the other 25% of his time on Strand II conceptualizing activities.

Overall, the FLING program utilized the same general structure, instructional techniques, quality control procedures, and instructional materials as the AITPT program. However, several program modifications were required by the compressed training time and by the need to accommodate personnel from all general reading grade levels; i.e., below 3rd grade to above 7th grade levels. The following section will describe the program modifications, the teacher training, and conclude with a brief description of the general administrative operation of the school.

Modifications Necessitated by Range of Reading Levels

Since it was projected that almost two-thirds of the Guard personnel would require reading training, it was decided not to pull these people out as a special group for special training as is the situation with the AITPT students. Rather, the reading training was presented as the entry week

introduction into MOS training and it was required for all personnel. Thus, no one was singled out as being so inept as to require special remedial training. The effect of this decision was that the reading school would have approximately one-third of its students with reading skills well above the 7.0 grade level who would not require the AITPT training. Since the Strand I training was modularized and contained specific task proficiency tests which enable students of sufficient skills to bypass unnecessary training, it was decided to have all students go through the FLING training with the expectation that the more able readers would probably pass the pre-module test or would meet task mastery requirements rather rapidly. Therefore, it was planned to use these students to perform the administrative duties in the classroom and, in addition, to use them as peer tutors for the less able students. It was hoped that by having the peer tutors work in this capacity in the reading school, that this relationship could be capitalized on in regular MOS training and so help facilitate the poorer student's learning by giving him someone besides the MOS instructor to turn to for help. This decision was not inconsistent with the FLIT model in which the better "poor readers" were used in paper processing activities and as teacher's assistants. However, in FLIT/AITPT there were not as many peers utilized in the classroom as was expected to be available in the FLING classroom. Thus, there was some concern as to how effective or disruptive it would be to have approximately a third of the class working as peer tutors; that is, would they be able to work as peer tutors without extensive training, and/or would this number of idle students cause more confusion than benefit?

Modification Necessitated by the Compressed Training Time

This section will discuss the Strand I changes, followed by a discussion of the Strand II modifications.

Strand I Modifications — Given that the Strand I component is comprised of six basic instructional modules, and that FLING had basically only five instructional days, excluding the half day of time required to in-process and out-process the students, it was decided that one day of training be allocated for each module. That is, the student was given one day of instruction in a module and was then automatically moved to the next module the following day, regardless of his post proficiency test performance. The exception being the Table of Contents and Index modules, which were given in a single day. The philosophy underlying the decision to move people to the next module before reaching task mastery was based on the premise that it is better to expose students to all of the job reading tasks than to have them consume all of their time in meeting mastery requirements for only one module. This movement was done on an individual basis and at various times throughout the training day to avoid having the students feel that it did not matter if one met the module criteria because one would be advanced automatically in any case. Also, the student was required, in most cases, to take a post-module proficiency test before the teacher moved him to the next module.

In addition to forced-pacing of the student's progress, the module mastery criterion of 90% or more items correct in 20 minutes or less was relaxed to a more realistic level of 85% in 25 minutes or less. This change effected all modules except the Forms module for which the 90% in ten minutes criterion was maintained. The effect of this change will be described later in comparison to the FLIT data.

Another change in the Strand I program dealt with the number of worksheets assigned upon failure of a pre-module proficiency test. Under AITPT, failure of the test meant that the student was assigned a set of ten worksheets which had to be completed to 100% correct criteria before being eligible to take the post-module proficiency test. For FLING, the number of worksheets was reduced to an average of six worksheets, but the student still had to get a 100% on all worksheets before being allowed to take the post-test. Again, the Forms module worksheets assignment was unchanged, since it is not possible to reduce the number of worksheets without a major rewrite of the materials.

The AITPT program was designed to be conducted with students of varying weeks of AITPT training experience in the same classroom. Thus, in AITPT, students were generally spread over all six of the instructional modules with proficiency testing occurring on an as-needed basis. However, the forced-pacing of the FLING students meant that a large percentage of the class would be ready for proficiency testing almost at the same time throughout the training week. To handle this large group-movement through the FLING program, unnecessarily large quantities of proficiency tests and Army manuals would have to have been prepared and assembled. To cope with this problem, the regular AITPT module training sequence, illustrated in Figure 1, was disregarded, since that sequence was not based on any hierarchically designed set of skills. Instead, the FLING program introduced the students to the Strand I task training either with the Table of Contents or the Index module initially. Upon completion of both of those modules, the student was then eligible for training in any of the four remaining modules in any sequence based upon the availability of training materials for those modules he needed to complete.

Strand II Modifications — FLING Strand II training was allocated two hours a day for four days a week. Given this limited amount of time, it was decided to concentrate on instruction related to a conceptualizing activity of transforming information from one type of display to another. It was felt that the transformation training involving classification and image displays would provide the student with different ways of learning and storing prose information while simultaneously beginning the building of a job-relevant knowledge base. The only modification to the conceptualizing instruction was a reduction in the number of job-relevant/general military passages which the students were exposed to; i.e., one passage per day of instruction. Otherwise, the classification table and imaging techniques were taught in the same manner as used in the regular AITPT Strand II training.

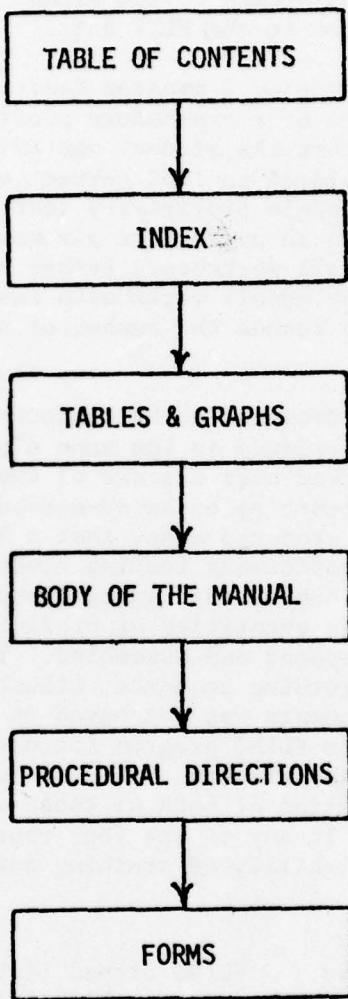


Figure 1. AITPT Strand I Module Training Sequence.

Teacher Training

Under the AITPT system, teacher training was conducted for a two-week period, one week of working with an experienced teacher in the classroom as an aide, followed by a week in which the new teacher assumed the teaching role under the supervision of the experienced teacher. Unfortunately, time did not permit this luxury for the FLING staff training. Two days of intensive, simulated workshop training was given the seven FLING teachers; the eighth teacher was an experienced AITPT teacher, and as such, assisted in the workshop training. As part of the Strand I training, the teachers acted as students by taking pre-module proficiency tests in each of the modules and by completing a sample of worksheets for each of the modules. This part of the training was conducted in a regular classroom setup with one of the experienced HumRRO managers performing the role of the classroom teacher.

The Strand II training was presented in a similar manner with the teachers again assuming the roles of students by actually transforming information in prose form into classification tables and image displays.

Throughout the first two weeks of instruction, three FLIT-experienced members of the HumRRO staff circulated through the classrooms providing assistance and direction on an as-needed basis. In fact, the initial period of the Strand II instruction was taught by an experienced HumRRO staff member so that each of the new teachers had an opportunity to observe the Strand II instructional techniques in use with "real" students.

To ensure standardized quality controlled instruction, each teacher was formally observed during the third week of instruction. This observation period was followed by a private critique of the teacher's performance. This technique of observation was continued on a casual, infrequent walk-in basis throughout the remaining two weeks of instruction to assure quality control maintenance of the instruction.

Administrative Operation of the FLING School

The FLING school was set up in four two-story buildings with a classroom located on each floor. The ratio of personnel within the five MOSs initially necessitated two classrooms for Supply, Mechanic, and Driver training. However, changes in the MOS classification of some of the personnel by the National Guard, required that one of the Supply classrooms be integrated with the Field Wiremen classroom, which carried the lightest student load, and that two of the classrooms be used for Cook training. This reclassification of personnel, based on their USAFI reading scores and their MOS reading requirements, will be discussed later in this section.

General Procedures — The FLIT/AITPT program was designed for use with a student/teacher ratio of about 15 to 1. This seemed to be the optimal student load, given the heavy student/teacher interactions imposed by the self-paced, individualized nature of the AITPT program. Since that training was predicated on the use of two or three students as teacher aides, it seemed reasonable that for the FLING instruction, the teachers might be able to handle larger student ratios if the additional students had higher (above the 7.0 grade level) reading skills. Thus, in the FLING program, the mean student/teacher ratio was 21 to 1, with approximately 43% of the students having entry-day Job Reading Task Test scores above the 7.0 grade level. During the program, the actual number of students per classroom ranged from 13 to 29 as a function of the fluctuations in the student input in the various MOSSs. Generally, the Field Wireman teacher had the lowest student/teacher ratio, and the Supply and Driver teachers had the largest ratios.

Five classes of students were taught at the FLING school. Each class entered on Monday and completed the training on Saturday morning. FLING instruction, as shown in Table 1, was given for six hours each day, Tuesday through Friday: four hours of Strand I and two hours of Strand II. On Monday the first two hours were used to in-process the new students and the remaining four hours were devoted to Strand I training. The Saturday schedule allocated the first hour and one-half for last-minute review/assignment completion, and the remaining two hours were utilized for out-processing the students.

The Monday in-processing of the new class included a welcoming orientation, and administration of a student background questionnaire, the Job Reading Task Test, and the Strand II Classification Test. The out-processing included the administration of an alternate form of the Job Reading Task Test and the Strand II Classification Test. Although entry-day test results were not discussed with the students, each teacher, as part of the Saturday out-processing, privately discussed the test results with each student. To avoid downgrading the student's skills, the test results were discussed only in terms of amount of gain between their entry and exit test scores, not in terms of entry/exit reading grade levels. This was done because prior experience in the FLIT program indicated that people tended to be embarrassed at being told that their reading ability was comparable to that of a fourth or fifth grade student. Thus, it was decided to avoid labeling skill levels in terms of reading grade levels. For the better students, for whom little improvement was expected, it was explained that their skills were already very satisfactory and that they should not encounter difficulty in their job training program.

TABLE 1. FLING TRAINING SCHEDULE

	Number of Hours						TOTAL
	MON	TUE	WED	THU	FRI	SAT	
In-processing	2	0	0	0	0	0	2
Strand I	4	4	4	4	4	0	20
Strand II	0	2	2	2	2	0	8
Review						1-1/2	1-1/2
Out-processing	0	0	0	0	0	2	2
							33-1/2

USAFI Testing — During BCT, each company was administered a form of the USAFI general reading comprehension test. These results and the student's MOS assignment were provided to the FLING school personnel prior to the student's arrival to permit assignment of students to appropriate classrooms and to permit equal distribution of students by reading grade levels in those MOSs with more than one classroom. Based on these test results, prospective student peers (teacher aides) were identified so that the teachers could begin utilizing them in that capacity as soon as the class began on Monday morning.

MOS Reclassification — The USAFI information was also used by the military to reclassify personnel into MOSs more appropriate to their literacy skill levels. The decision to reclassify was made after the first FLING class entered MOS training and it was found that those students who entered the training below the minimum reading level (established by previous HumRRO research) were having difficulty in completing the instruction. This was particularly noticeable in the Supplyman Course in which 13 of the 52 students were identified as academic failures; seven of them were eventually reclassified into another MOS. Therefore, given that the Fort Ord MOS training programs were only going to be in operation for a short, fixed period of time, it would not be possible to change a person's MOS after he had been in an MOS training program for any appreciable length of time. To help alleviate this problem, the beginning of the Driver's course (64C) was delayed one week to allow reclassification of personnel within the same company if they were dropped in the first week of MOS training. Otherwise, those personnel failing to complete MOS training would have to be discharged or re-assigned to another fort for training. Therefore, it was

decided to reclassify personnel in the Supplyman (76Y) and Field Wireman (36K) MOSs whose general reading levels were two grade levels below the minimum for those MOSs. The "two grade level below" criterion was used since that was the average gain which prior FLIT research indicated might be expected as a result of the reading training (Sticht, 1975).

Reclassification was usually made into an MOS with similar training time to the MOS being left. Each trainee was individually counseled regarding the change, why it took place, and to solicit any valid reason why it should not take place. By reclassifying these personnel at this stage of their training, it enabled them to remain in the same unit with their friends and to graduate at nearly the same time. Of the 900 men starting MOS training, 9.7% (N = 87) were eventually reclassified.

FLING EFFECTIVENESS

This section will summarize the results of the FLING training in terms of the following:

1. Student characteristics.
2. In-course performance data.
3. Pre/post measures of performance on the Job Reading Task Test.

Student Characteristics

This section describes some of the characteristics of the 866 students who participated in the FLING training from 26 July 1976 to 28 August 1976. All the students were young male adults who were members of the U.S. Army National Guard from various units around the United States. The data summarized in Table 2 was obtained from a one-page questionnaire administered during the first day in the program. Since completion of the questionnaire was optional, some of the questions show a "no response" entry.

The data has been summarized by each MOS separately and then pooled across MOSs. Within each MOS the data have been broken into two categories: information relevant to students scoring below the 7.0 grade level on the entry JRTT, and information relevant to students scoring at or above the 7.0 grade level on the entry JRTT. For purposes of discussion, these two reading groups are referred to in this report in the following ways:

- Below 7.0 reading grade level group, or the symbol <7.0 group.
- At/above 7.0 group, or the symbol ≥ 7.0 group.

Looking at the student demographic data, the median age across MOSs is 19 for both reading level groups. The median years of education is 11 years for personnel reading below 7.0, and 12 years for personnel reading at or above the 7.0 grade level. Overall, of the <7.0 group, 23% are high school graduates or GED certified, as compared to 50% of the ≥ 7.0 group.

TABLE 2. FLING STUDENT CHARACTERISTICS

VARIABLE	M O S						Pooled
	Cook	Driver	Mechanic	Field	Wireman	Supplyman	
<7.0	≥7.0	<7.0	≥7.0	<7.0	≥7.0	<7.0	<7.0
Number of Students	97	38	120	124	118	105	110
Median Age	19	19	19	18	19	18.5	18.5
Median Years of Education	11	12	11	11	10	12	11
Percent H.S. Grad/GED	22	55	24	50	26	51	43
Primary Language:							
English %	71	95	90	99	87	95	96
Spanish %	28	05	05	01	12	04	02
Other %	01	0	05	0	08	01	02
Ethnic Membership:							
Caucasian %	15	50	33	66	37	66	21
Negro %	37	29	07	13	31	15	51
Mex-Amer %	12	08	04	05	09	07	08
Other %	16	08	05	04	07	04	04
No Response %	19	05	30	12	16	08	16

As might be expected, 86% of the <7.0 and 96% of the ≥7.0 reported English as their primary language, with 12% of the <7.0 and 3% of the ≥7.0 reporting Spanish as their primary language. Students with Spanish as their primary language are most heavily represented in the <7.0 group in the Cook MOS and to a somewhat lesser degree in the Mechanic and Supplyman MOSs. The larger percent of Spanish speaking personnel in the Cook MOS may be a result of the reclassification of personnel from the Supply and Field Wireman MOSs.

As Table 2 shows, there was a large variety of ethnic groups represented in the FLING training. Generally, the percentage of caucasians reading above the 7.0 level represented twice the number of caucasians reading below that level. The other ethnic groups tended to be more heavily represented in the below 7.0 level category.

Table 3 displays the frequency distribution of the USAFI general reading scores for the FLING students broken out by MOS. Overall, 61% of the Guard trainees were reading below the seventh grade level. It was expected that personnel in the "3 and below" reading grade category would not greatly benefit from the FLING training, since the AITPT program was designed for use with personnel in the 4.0 - 7.0 reading grade levels; i.e., the AITPT Strand I training assumes some minimal basic reading skill competence, while people in the "3 and below" level are still at the entry decoding stage of reading.

TABLE 3. FLING STUDENTS DISTRIBUTED OVER USAFI
READING GRADE LEVELS BY MOS.

USAFI READING GRADE LEVELS	M O S										
	Cook		Driver		Mechanic		Field Wireman		Supplyman		Total
	%	Cum%	%	Cum%	%	Cum%	%	Cum%	%	Cum%	%
3/below	25	25	9	9	8	8	3	3	4	4	10
4	21	46	15	24	9	17	1	4	5	9	21
5	13	59	17	41	14	31	21	25	29	38	39
6	17	76	20	61	23	54	32	57	25	63	61
7/above	24	100	39	100	46	100	43	100	37	100	39
N		112		201		174		70		126	683

As shown in Table 3, the Cook MOS had over three-quarters of its personnel with reading skills below the 7.0 level, with a quarter of those students reading at or below the 3.0 grade level. This distribution is largely attributable to the reclassification of lower reading level Supplyman and Field Wireman into the Cook MOS. Thus, that MOS, and to some extent, the Driver MOS, were specifically bottom-loaded, while the Field Wireman and Supplyman lower levels were almost eliminated. In addition, some higher reading skill Cook students were permitted to choose another MOS to equalize the training load among the various MOS schools.

The results of the entry-day testing of the same personnel on the JRTT is shown in Table 4. As with the USAFI data, over half (57%) of the students scored below 7.0 on the entry JRTT, which is not surprising, since the JRTT is highly correlated to general reading ability. Again, the Cook MOS shows more people (72%) reading below the 7.0 level, with 25% reading at or below the 3.0 grade level.

Median JRTT grade levels were in the 5 - 5.9 range for Cook and Supplyman, the 6 - 6.9 range for Field Wireman and Mechanic, and the 7 - 7.9 range for Driver. The higher median for the Driver group may be the result of the transfer of higher level Cook students to that MOS.

TABLE 4. FLING STUDENTS DISTRIBUTED OVER ENTRY JRTT
READING GRADE LEVELS BY MOS.

JRTT READING GRADE LEVELS	M O S										
	Field					Supplyman					Total
	Cook	Driver	Mechanic	Wireman		Cum%	Cum%	Cum%	Cum%	Cum%	% Cum%
0 - 2.9	06	06	06	06	05	05	03	03	07	07	06
3 - 3.9	19	25	07	13	10	15	04	07	11	18	10
4 - 4.9	21	46	12	25	12	27	08	15	14	32	13
5 - 5.9	12	58	12	37	13	40	22	37	19	51	15
6 - 6.9	14	72	12	49	13	53	22	59	11	62	13
7 - 7.9	07	79	06	55	11	64	11	70	08	70	09
8 - 8.9	02	81	07	62	07	71	05	75	06	76	06
9 - 9.9	08	89	08	70	07	78	02	77	04	80	06
10 - 10.9	03	92	10	80	08	86	03	80	09	89	07
11 - 11.9	04	96	10	90	08	94	11	91	04	93	08
12 +	04	100	10	100	06	100	09	100	07	100	07
N	136		244		229		91		179		879

In-Course Performance Data

This section presents information describing student progress within the FLING program in terms of the Strand I module evaluation data and the Strand II comprehension data. In both summaries, the data is presented separately for students whose entry JRTT scores were below the 7.0 grade level and for students whose scores were at or above the 7.0 grade level.

Strand I Module Evaluation Data

The Strand I evaluation data consists of measures of the training effectiveness for each of the six modules as assessed by the module's proficiency tests given before and after module training. Table 5 shows for each module:

1. The percentage of students who passed the pre-test for the module and were immediately advanced to the next module.
2. The percentage of students who failed the pre-test, but, after training, passed the post-test for the module and were then advanced to the next module.
3. The percentage of students who failed both the pre- and post-tests for the module and were advanced to the next module anyway.
4. The percentage of students who never received pre-testing or training in the module.

The latter category of information was included because some of the students, even with forced-pacing, spent too much time in the early modules, thus not allowing sufficient time for training in some of the modules presented at the end of the program. In that situation, the teachers were advised to skip the Procedural Directions (PD) module, in favor of the Forms module, since the PD training is similar to that contained in the Body of the Manual module.

From the data it is clear that almost three-quarters of the students in the below 7.0 group and slightly less than half of the at/above 7.0 group needed training in the various modules. The only exception to this is the Table of Contents (TOC) module which shows a substantially higher percentage of students successfully mastering the module pre-test in both the below 7.0 and the at/above 7.0 groups. This is understandable, since the TOC module is probably the easiest of all the Strand I instructional modules.

TABLE 5. MODULE PROFICIENCY DATA FOR FLING STUDENTS

STRAND I INSTRUCTIONAL MODULES

<u>Below 7.0 Group</u>	Table of Contents %	Index %	Tables & Graphs %	Body of the Manual %	Procedural Directions %	Final Forms %
Passed module pre-test without training	41	18	28	24	28	13
Passed module post-test after training	25	26	21	19	11	25
Did not pass module post-test but advanced to next module	34	55	49	54	33	46
Did not take module	0	01	01	03	28	15

N = 499

At/Above 7.0 Group

Passed module pre-test without training	78	58	68	59	54	19
Passed module post-test after training	15	25	21	20	21	52
Did not pass module post-test but advanced to next module	07	16	11	21	19	27
Did not take module	0	01	0	0	06	02

N = 371

Overall, approximately 40% of the students in the below 7.0 group met module criterion for each of the Strand I modules. In comparison, at least 75% of the at/above 7.0 group met module criterion with the exception of the Forms module in which 71% of the at/above 7.0 students achieved the criterion. Thus, as might be expected, a larger percentage of the below 7.0 level students had to be moved to the next module without reaching criterion performance, than students in the at/above 7.0 group.

This movement is also reflected in the percentage of students who did not have time to be tested or trained in a module. For instance, in the beginning TOC and Index modules, practically no one by-passed these modules which were given at the beginning of the training week. However, for the below 7.0 group, the Procedural Directions and Forms modules show a much larger number of students who did not have time to pre-test and/or receive instruction in those modules as compared to the at/above 7.0 group. A large percentage of the at/above 7.0 group, besides being students, was performing peer tutoring and classroom administrative activities. This implies that while a large percentage of the group needed some instruction in each of the modules, they did not seem to require as much time to learn the skills — given that a high proportion of them met the module criterion and that a very low percentage of them missed any pre-testing or instruction in a module.

Table 6 presents the module effectiveness data for the FLIT/AITPT, extended day, and integrated training programs in comparison to the FLING below 7.0 group of students.

TABLE 6. MODULE EFFECTIVENESS DATA FOR FOUR VERSIONS OF THE AITPT PROGRAM.

	TOC			Index			Tables & Graphs			Body of Manual			Procedural Directions			Forms		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
FLIT/AITPT	86	14	*	72	28	*	73	27	*	52	48	*	39	61	*	**	**	**
Ext. Day	76	24	0	45	55	0	35	51	14	18	48	34	17	32	51	38	11	51
Integrated Training	30	70	0	31	69	0	40	60	0	02	88	10	04	37	59	08	09	83
FLING																		
Below 7.0	66	34	0	44	55	1	49	49	01	43	54	03	39	33	28	38	46	15

A = Percent mastering module.

B = Percent trained & advanced without mastery.

C = Percent not reaching or not trained in module.

*All students attempted all modules in this program.

**Data not available.

In interpreting the data in Table 6, it must be pointed out that there was a difference in the module criterion, which is composed of both accuracy and time components, between the various programs. The original criterion of 90% correct in 20 minutes was used in both the FLIT/AITPT and the integrated training programs. The extended day program changed the criterion from 90% to 80% correct within the same 20-minute time frame. The FLING program changed both the accuracy and the time components of the criterion to 85% in 25 minutes. Given these changes in the criterion, a direct comparison of the students' module performance in each of the programs is not meaningful. However, the relative relationship between the success rates of the four programs indicates that in the longer term FLIT/AITPT program, the extra time does permit a larger percentage of the students to reach mastery than in any of the modified versions of the program which were conducted in approximately half to one-third of the amount of training time allocated in the AITPT program. In contrast, the integrated training program which maintained the same criterion as in the AITPT program, resulted in substantially lower percentages of students being able to meet the mastery criterion in the various modules. This was particularly noticeable in the Body of the Manual and the Procedural Directions modules.

Even by modifying the criterion, as in the cases of the extended day and the FLING programs, less than half of the students were able to meet the less demanding mastery criterion. The exception to the last statement is the TOC module in which 76% and 66% respectively, of the students attained module mastery as defined by their specific program. Thus, in terms of mastering the skills trained in the various modules, it would appear more training time is necessary if large percentages of personnel are expected to indeed master these specific job reading task skills.

As a final remark, the forced-pacing of the FLING program does appear to have been more effective, in terms of allocating student time so as to permit testing/training in all modules, than the other two versions of the FLIT/AITPT program.

Strand II Comprehension Data

This section will summarize data obtained to evaluate the effectiveness of the modified FLING Strand II conceptualizing training in improving student comprehension. The data, representing two of the FLING classes, were obtained by administering the FLIT Classification Table test, both before and after the training. The test, by requiring the student to take information presented in prose form and transform it into a classification table type of display, provides a measure of the student's comprehension of the prose materials. There is a maximum of 20 raw score points possible in the test.

The results of the conceptualizing testing, shown in Table 7, are presented in terms of the mean raw score percent correct, since the test does not have reading grade level equivalents. On the entry test, the below 7.0 group answered, on the average, 48% of the test items correctly, while the at/above 7.0 group averaged 88%. After eight hours of Strand II training on how to transform prose information into a classification table, the below 7.0 group answered 70% of the items correctly, on the average, for a mean gain of 22%. The post-test results for the at/above 7.0 group showed them answering, on the average, 96% of the items correctly, for a mean gain of 8%. The difference between the two gain scores can be largely attributed to the restricted amount of area for improvement for the at/above 7.0 group.

There appears to be considerable differences between the mean percent gain scores for personnel in the below 7.0 group when looked at by MOSSs. These gain scores ranged from a mean of 11% for Cook to a mean of 28% for Supplyman, a range of 17 points. Some of this difference may be attributable to the large differences in the entry test scores, and some to the differences in the teaching techniques used by the different instructors. It should be noted that the Strand II instruction is not pre-packaged instruction as in the Strand I modules. Rather, Strand II is teacher taught, and, as such, can show great differences in the effectiveness of the instruction, depending on the skills of the teacher. There is less range in the mean percent gain scores for the at/above 7.0 group due to their restricted possible range of improvement; i.e., their entry scores permit at the most, only a gain of 15 points.

Another perspective of the effectiveness of the Strand II conceptualizing training in improving student comprehension for students in the below 7.0 group is shown in Figure 2. As would be expected, if the training is effective, there is an upward shift in the percent of students getting a larger number of the test items correct after training. That is, on the pre-test, 36% of the students were in the bottom (0 - 4) category, while on the post-test, this percentage dropped to 13%. At the other end of the continuum, only 3% of the students were in the top category (15 - 20 raw score points). This percent changed to 63% of the students after training. Thus, it would seem that there is a definite improvement in the ability of the poor group of readers to be able to transform prose information into a classification table type display.

TABLE 7. PRE-/POST-TRAINING MEASURES OF PERFORMANCE ON THE STRAND II CLASSIFICATION TABLE TEST FOR STUDENTS IN THE BELOW 7.0 AND AT/ABOVE 7.0 GROUPS DISTRIBUTED BY MOS.

PERSONNEL BY MOS	BELOW 7.0 GROUP						AT/ABOVE 7.0 GROUP						POOLED					
	N			Pre Post Gain			N			Pre Post Gain			N			Pre Post Gain		
	X%			X%			X%			X%			X%			X%		
Cook	28	57	68	11	20	85	98	13	48	68	80	12						
Driver	46	40	64	24	45	90	94	04	91	64	79	15						
Mechanic	48	50	70	20	36	84	97	13	84	64	82	18						
Field Wireman	18	62	79	17	13	94	98	04	31	76	87	11						
Supplyman	38	44	72	28	34	87	95	08	72	64	83	19						
TOTAL	178	48	70	22	148	88	96	08	326	66	81	15						

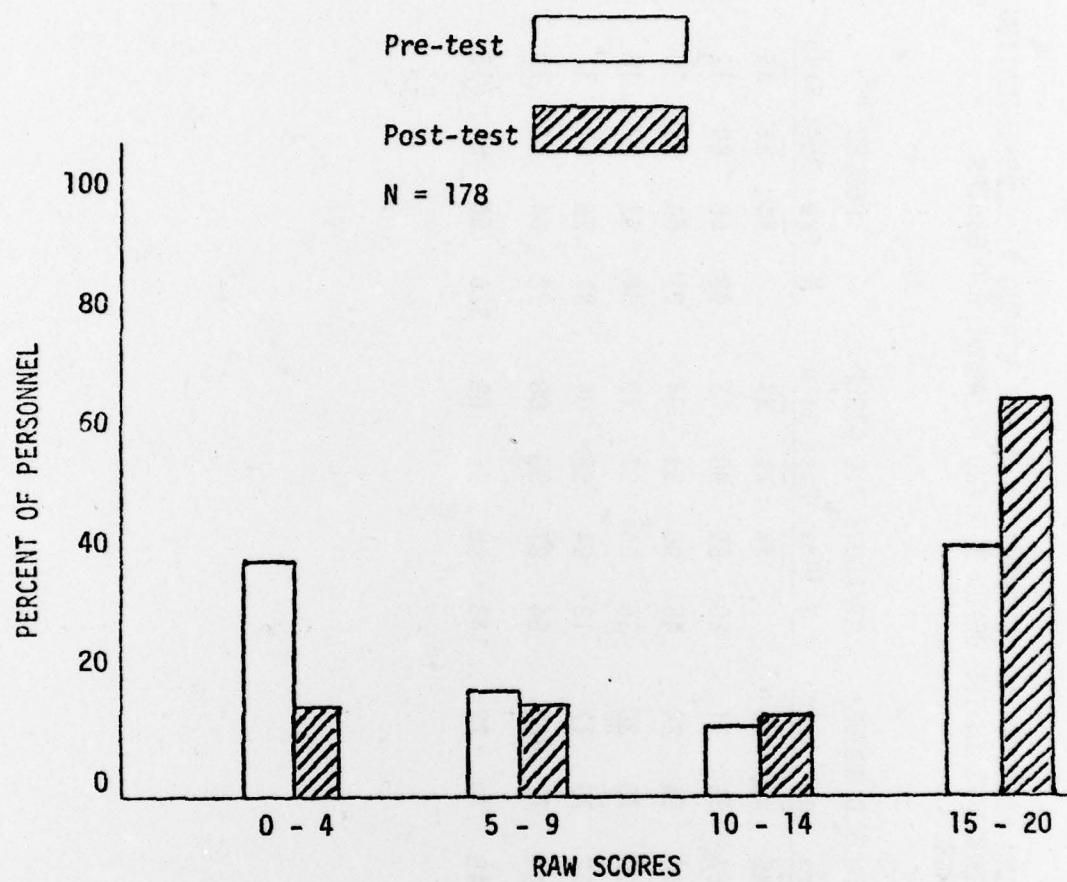


Figure 2. Distributions of Pre-/Post-Training Measures on the Strand II Classification Test for Students in the Below 7.0 Reading Level Group.

Pre-Post Measures

This section will summarize the overall effectiveness of the FLING training in terms of the pre-/post-training measures of student performance on the *Job Reading Task Test*, followed by a comparison of the FLING results with that of other versions of the AITPT programs.

FLING Student Performance on JRTT

Table 8 presents the JRTT data in terms of the mean reading grade levels for personnel broken out by MOS and reading skill groups; i.e., personnel in the below 7.0 group and the at/above 7.0 group, as determined by their performance on the entry JRTT.

Consistently, those personnel whose entry JRTT scores were below the 7.0 grade level showed, on the average, more improvement (2.0 years) than their more skilled counterparts (0.7 years). This was not unexpected, since the program was developed for those students whose job reading ability was below the 7.0 level. It was assumed that the at/above 7.0 students already had acquired these basic skills. Overall, the gain scores were rather uniform across the five MOSSs.

Since the lower skilled students tended to make the most gain, the gain scores were analyzed to determine which entry reading levels tended to account for most of the gain; i.e., for whom was the training the most effective. This data is summarized by entry reading grade level in Table 9.

The results indicate that the largest gains are made at the 5 - 6.9 range and at the 0 - 2.9 range of entry reading ability. The latter gain, as well as the negative and negligible gains made in the top reading ranges of the test, may well reflect some component of statistical test regression.

A third perspective on the effectiveness of the FLING training is shown in Table 10 in terms of the percentage of students making various amounts of gain on the JRTT.

The program effectiveness is particularly noticeable with the below 7.0 group in which more than two-thirds of the students made gains of more than one reading grade. In fact, 42% of them made gains in job reading task performance of more than two grade levels. In comparison, the at/above 7.0 group, as expected, had a smaller proportion of students, 46%, making at least a one-year gain, with only one-quarter of them making more than two years worth of improvement. Overall, more than 50% of the students made JRTT gains in excess of one year, with over a third of them making gains of more than two grade levels. Thus, as indicated in Tables 8 & 9, the FLING training was successful in substantially raising the job-related reading ability of the Guard personnel, particularly those personnel whose entry JRTT scores were below the 7.0 grade level.

TABLE 8. FLING STUDENT ENTRY & EXIT MEAN JRTT SCORES
DISTRIBUTED BY MOS.

<u>M O S</u>	<u>N</u>	MEAN JRTT SCORES		
		<u>Entry Test</u>	<u>Exit Test</u>	<u>Gain</u>
Cook				
<7.0	97	4.6	6.0	1.4
≥ 7.0	39	9.9	10.3	0.4
Total	136	6.1	7.3	1.2
Driver				
<7.0	120	4.6	6.7	2.1
≥ 7.0	124	10.4	11.1	0.7
Total	244	7.6	8.9	1.3
Mechanic				
<7.0	123	4.7	7.2	2.5
≥ 7.0	106	9.8	10.7	0.9
Total	299	7.1	8.8	1.7
Field Wireman				
<7.0	54	5.3	7.2	1.9
≥ 7.0	37	10.1	10.5	0.4
Total	91	7.2	8.5	1.3
Supplyman				
<7.0	111	4.6	6.7	2.1
≥ 7.0	68	9.9	11.0	1.1
Total	179	6.6	8.3	1.7
Total Personnel				
<7.0	505	4.7	6.7	2.0
≥ 7.0	374	10.1	10.8	0.7
TOTAL	879	7.0	8.5	1.5

TABLE 9. MEAN JRTT GAIN SCORES FOR FLING STUDENTS
DISTRIBUTED OVER ENTRY JRTT LEVELS BY MOS.

ENTRY JRTT READING LEVELS	MEAN GAIN SCORES						N
	Cook	Driver	Mechanic	Field Wireman	Supplyman	Total	
	\bar{x}	\bar{x}	\bar{x}	\bar{x}	\bar{x}	\bar{x}	
0- 2.9	2.4	2.7	2.4	1.2	2.7	2.5	50
3- 3.9	1.0	1.8	1.9	1.2	2.0	1.6	88
4- 4.9	1.5	1.7	2.1	2.2	1.6	1.8	117
5- 5.9	1.2	1.9	2.5	1.2	2.3	2.0	132
6- 6.9	1.8	2.1	3.1	2.6	2.2	2.4	118
7- 7.9	1.7	1.8	1.9	1.6	2.4	1.9	75
8- 8.9	2.0	1.4	1.8	1.4	1.6	1.6	50
9- 9.9	0.7	1.5	0.7	1.6	0.4	1.0	53
10-10.9	-0.8	0.3	0.5	0.5	1.6	0.6	66
11-11.9	-0.6	0.2	0.1	-0.4	0.2	0.01	67
12 +	-0.8	-0.2	-0.1	-1.1	-0.2	-0.4	63

TABLE 10. DISTRIBUTION OF STUDENT READING GRADE LEVEL (RGL) GAIN

<u>PERSONNEL</u>	R G L G A I N				
	<u>Neg - 0.0</u> (N)	<u>0.1 - 1.0</u> (N)	<u>1.1 - 2.0</u> (N)	<u>2.1 +</u> (N)	%
Cook Students					
<7.0	(12)	12	(36)	37	(24)
<u>≥7.0</u>	(19)	49	(02)	05	(09)
Total	(31)	23	(38)	28	(33)
					24
Driver Students					
<7.0	(07)	06	(29)	24	(32)
<u>≥7.0</u>	(50)	40	(19)	15	(29)
Total	(57)	23	(48)	20	(61)
					25
Mechanic Students					
<7.0	(02)	02	(20)	16	(33)
<u>≥7.0</u>	(37)	35	(22)	21	(21)
Total	(39)	17	(42)	18	(54)
					24
Field Wireman Students					
<7.0	(04)	07	(19)	35	(13)
<u>≥7.0</u>	(17)	46	(05)	14	(05)
Total	(21)	23	(24)	26	(18)
					20
Supplyman Students					
<7.0	(12)	11	(17)	15	(32)
<u>≥7.0</u>	(22)	32	(09)	13	(14)
Total	(34)	19	(26)	15	(46)
					26
Total Students					
<7.0	(37)	07	(121)	24	(134)
<u>≥7.0</u>	(145)	39	(57)	15	(78)
TOTAL	(182)	21	(178)	20	(212)
					24
					(307)
					35

With any test there is concern that the test gain may be attributed to testing error; i.e., the test may not provide consistent measurement of the same set of skills. When the JRTT was developed and normed, the test's standard error of measurement was estimated to have a value of 0.9 reading grade level. The JRTT is available in three equivalent forms. Test forms were assigned randomly on both pre-training and post-training testing, subject to the restriction that no student was administered the same form of the test on both occasions. This indicates that measured gain reflects increase in performance, rather than mere familiarity with test items, since the same test material was never repeated.

Comparison of FLING JRTT Data With
That of Other Versions of the AITPT Program

This section discusses the effectiveness of the FLING training in comparison to data obtained on the FLIT/AITPT program and its variations. This information is summarized in Table 11. To permit meaningful comparisons between the various programs, only the FLING data for the below 7.0 group of students is shown.

According to the data, the FLING results are comparable to those obtained in the FLIT/AITPT program and in the two experimental modifications of the FLIT program — the extended day and the integrated training programs. All four programs showed similar entry, exit, and gain scores on the JRTT, even though there is twice the amount of training time for the parent FLIT program as compared to its three adaptations. This suggests that there is an early leveling-off point in the amount of gain on the JRTT which challenges the idea that if one had twice the time, one could expect twice the gain. Additional research is needed to identify how much time is actually needed to raise the JRTT scores to reflect an average 2.0 years gain, and to determine how much additional training time is needed to make a substantial gain beyond that level to include what type of training is required.

The four programs also report similar percentages of personnel attaining the literacy program objective of a 7.0 reading grade level at the end of the training. These percentages ranged from 37% to 44% of the students meeting the 7.0 criterion, with the FLING results in the middle at 41%.

TABLE 11. COMPARISON OF PRE/POST JRTT SCORES FOR THREE MODIFIED VERSIONS OF THE AITPT STRAND I TRAINING PROGRAM WITH THE FLIT/AITPT PROGRAM.

PROGRAMS	N	MEAN JRTT SCORES			APPROXIMATE HOURS OF STRAND I TRAINING	PERCENT ACHIEVING 7.0 AT END OF TNG
		Entry Test	Exit Test	Gain		
FLIT/AITPT	714	5.2	7.3	2.1	50 - 75	44%
FLIT Extended Day Training Program	66	4.8	7.0	2.2	23	44%
FLIT Integrated Job Skills/Reading Skills Program	81	5.5	7.2	1.7	25.5	37%
FLING Program	505	4.7	6.7	2.0	21	41%

In general, the summative results of the FLING program indicate that the training was approximately equivalent, in terms of student performance, to that obtained in other applications of the FLIT Strand I training. Thus, it appears that it is not only feasible to provide effective Strand I training in a modified version, but that the 50 to 75 hours of effective Strand I training in the AITPT program may be unnecessarily double the amount of time to effect a 2.0 years gain on the JRTT for students whose entry skills are below the 7.0 reading grade level. However, it should be recalled that the Strand I module mastery data showed that only approximately 50% of the students were able to meet the module criterion. Thus, even though the pre/post measures on the JRTT showed the FLING students making substantial gains, the students, as a group, were not able to demonstrate mastery in all phases of the FLING training.

EFFECT OF MOS TRAINING ON STUDENT JRTT PERFORMANCE

Since the main purpose of the FLING training was to prepare National Guard personnel to perform job-related reading tasks to facilitate their MOS training, there naturally was an interest in learning what effect the MOS (AIT) training might have on their ability to perform job-related reading tasks after AIT. Thus, while the official data collection regarding HumRRO's involvement in the Guard training terminated with the close of the FLING training, plans were made with the Army for them to administer an alternate form of the JRTT to all Guard personnel upon completion of AIT. As of the writing of this report, approximately one-third (N = 284) of the trainees have completed their MOS training. The results of their post-AIT JRTT testing is shown in Table 12, in comparison to their mean entry and exit FLING school JRTT scores. The post-AIT scores were provided by the Army.

Comparisons of the gain scores between the mean exit FLING JRTT scores and the mean post-AIT JRTT scores, show a 0.6 year gain in reading task performance. When examined by entry JRTT reading level groups, the below 7.0 group shows a mean 0.8 year gain, with the at/above 7.0 group showing a 0.4 year gain. Overall, the data indicate a continued increase in the students' ability to perform job-related reading tasks. In fact, the mean post-AIT scores for the below 7.0 students were all at or above the 7.0 reading grade level - the minimum reading level for MOS proficiency.

In retrospect, the National Guard personnel made the largest amount of gain, as a result of the direct instruction in job reading task performance provided by the FLING school training. These skills were then reinforced, to a smaller extent, during the AIT training. Thus, overall, it would appear that the training provided by the FLING project was effective in upgrading the job-related reading skills of the National Guard personnel.

TABLE 12. COMPARISONS OF MEAN JRTT SCORES FOR FLING STUDENTS AT THREE POINTS IN THE TRAINING CYCLE.

PERSONNEL	N	MEAN JRTT SCORES			GAIN SCORES		
		FLING SCHOOL			Entry/ AIT Test	Entry/ AIT	Exit AIT
		Entry Test	Exit Test	Post AIT Test	Entry Test	Exit Test	Exit AIT
Cook Students							
<7.0	18	4.4	6.0	7.0	1.6	2.6	1.0
≥ 7.0	65	9.2	10.0	11.2	0.8	2.0	1.2
Total	23	5.4	6.9	8.0	1.5	2.6	1.1
Driver Students							
<7.0	70	4.5	6.5	7.5	2.0	3.0	1.0
≥ 7.0	61	10.5	11.4	11.7	0.9	1.2	0.3
Total	131	7.3	8.8	9.4	1.5	2.1	0.6
Mechanic Students							
<7.0	27	4.6	7.2	7.7	2.6	3.1	0.5
≥ 7.0	16	9.9	10.4	10.9	0.5	1.0	0.5
Total	43	6.6	8.4	8.9	1.8	2.3	0.5
Field Wireman Students							
<7.0	25	5.3	6.8	7.3	1.5	2.0	0.5
≥ 7.0	19	10.1	10.6	11.3	0.5	1.2	0.7
Total	44	7.4	8.5	9.0	1.1	1.6	0.5
Supplyman Students							
<7.0	29	4.3	6.6	7.3	2.3	3.0	0.7
≥ 7.0	14	9.6	10.5	10.7	0.9	1.1	0.2
Total	43	6.0	7.9	8.4	1.9	2.4	0.5
Total Students							
<7.0	169	4.6	6.6	7.4	2.0	2.8	0.8
≥ 7.0	115	10.2	11.0	11.4	0.8	1.2	0.4
TOTAL	284	6.8	8.4	9.0	1.6	2.2	0.6

PROGRAM CONCLUSIONS & IMPLICATIONS

The previous sections have described the development, operation, and results of the FLING program. Based on these findings, the following conclusions and implications have been drawn:

1. If the National Guard soldiers who participated in this training are representative of the National Guard as a whole, then it can be estimated that approximately 61% of them have general reading skills below the 7.0 reading grade level.
2. The success of the FLING program, and similar short-term, modified versions of the AITPT program, indicate that it is possible to effectively increase (2.0 years mean gain) the ability of marginally literate personnel (i.e., personnel with general reading levels below the 7.0 level) to perform job-related reading tasks within a training time of 21 to 26 hours of instruction.
3. The above conclusion indicates the need for additional research to determine the minimum amount of job reading task training necessary to achieve an average 2.0 years gain in skill level. In addition, research also needs to be conducted to determine the amount of training, and the type of training, needed to improve personnel skills beyond the 2.0 level, not only in terms of job reading task performance, but also in terms of basic job-related reading skills. The latter skill area was only slightly addressed in the FLING training due to insufficient training time.
4. Part of the success of the FLING program is attributable to the training environment which differs considerably from that of the other versions of the AITPT training program. For instance, the teachers, who were carefully screened, did not teach the program long enough for it to become institutionalized. Thus, there is a question as to whether or not the school could maintain this level of intensive instruction over a long period of time; i.e., would there be a decrement in the JRTT gain scores? Also, the inclusion of the reading training as a required, introductory phase of the job skill training program undoubtedly contributed to negating, to a large extent, morale and attitude problems normally associated with remedial reading training of "selected personnel".
5. Programs like FLING, and other short-term, one-shot training experiences, suffice to provide an immediate assist to refresh/review already existing skills. Broader, more sustained, individually adapted type programs are needed to cope with the various skill deficiencies associated with the different reading skill levels if a permanent change is to be expected or desired! For instance, students with reading skills at or below the 3.0 reading grade level are only at the beginning decoding levels of reading, while students at the 6.0-7.0 level generally have well developed decoding skills, but are unable to utilize them effectively in relation to their comprehension skills.

Additional study is required to better understand the differences in the cognitive processing/communication skills between personnel of different reading levels. It is only by having a better understanding of these processes that it will be possible to construct training experiences relevant to the individual needs; and thus, expect to effect major and permanent changes in the mental processing of the marginally skilled/literate personnel.

REFERENCES

Sticht, T.G., Caylor, J.S., Fox, L.C., Hauke, R.N., James, J.H., Snyder, S.S., & Kern, R.P. *HumRRO's Literacy Research for the U.S. Army: Developing Functional Literacy Training*. HumRRO Professional Paper 13-73. Alexandria, Virginia: Human Resources Research Organization, December 1973.

Sticht, T.G. *A Program of Army Functional Job Reading Training: Development, Implementation, and Delivery System*. HumRRO-FR-WD-CA-75-7. Alexandria, Virginia: Human Resources Research Organization, June 1975.

Department of Defense. Project 100,000: Characteristics and Performance of "New Standards" Men. Office of the Secretary of Defense, Assistant Secretary of Defense (Manpower and Reserve Affairs) 1968.